Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Cancer-related acute pain: a systematic review of evidence-based interventions for Putting Evidence Into Practice.

Bibliographic Source(s)

Sundaramurthi T, Gallagher N, Sterling B. Cancer-related acute pain: a systematic review of evidence-based interventions for Putting Evidence Into Practice. Clin J Oncol Nurs. 2017 Jun 1;21(3):13-30. PubMed

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Aiello-Laws L, Reynolds J, Deizer N, Peterson M, Ameringer S, Bakitas M. Putting evidence into practice: what are the pharmacologic interventions for nociceptive and neuropathic cancer pain in adults. Clin J Oncol Nurs. 2009 Dec;13(6):649-55. [55 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

NEATS Assessment

National Guideline Clearinghouse (NGC) has assessed this guideline's adherence to standards of trustworthiness, derived from the Institute of Medicine's report Clinical Practice Guidelines We Can Trust.

 = Poor  = Fair  = Good  = Very Good  = Excellent

Assessment	Standard of Trustworthiness
NO	Disclosure of Guideline Funding Source
	Disclosure and Management of Financial Conflict of Interests

	Guideline Development Group Composition
YES	Multidisciplinary Group
YES	Methodologist Involvement
▮▯▯▯▯	Patient and Public Perspectives
	Use of a Systematic Review of Evidence
▮▮▮▮▯	Search Strategy
▮▮▮▮▮	Study Selection
▮▮▮▮▮	Synthesis of Evidence
	Evidence Foundations for and Rating Strength of Recommendations
▮▮▮▯▯	Grading the Quality or Strength of Evidence
▮▮▮▮▯	Benefits and Harms of Recommendations
▮▮▮▮▮	Evidence Summary Supporting Recommendations
▮▮▮▮▯	Rating the Strength of Recommendations
▮▯▯▯▯	Specific and Unambiguous Articulation of Recommendations
▮▯▯▯▯	External Review
▮▮▯▯▯	Updating

Recommendations

Major Recommendations

Note from the National Guideline Clearinghouse (NGC): Refer to the original guideline document for full dosages, references, and other essential information about the evidence. The recommendation ratings (Recommended for Practice, Likely To Be Effective, Effectiveness Not Established, Effectiveness Unlikely, Not Recommended for Practice, Expert Opinion) are defined at the end of the "Major Recommendations" field.

See also the NGC summaries of the related Oncology Nursing Society (ONS) guidelines on cancer-related pain:

Chronic and refractory pain: a systematic review of pharmacologic management in oncology.
Breakthrough cancer pain: a systematic review of pharmacologic management.
Nonpharmacologic pain interventions: a review of evidence-based practices for reducing chronic cancer pain.

Recommended for Practice

Epidural analgesia

- Local anesthetic infusion

Likely To Be Effective

Pharmacologic Interventions

- Gabapentin
- Parecoxib
- Intraspinal analgesia
- Oral tramadol
- Naproxen for colony-stimulating factor-related bone pain
- Nefopam

Nonpharmacologic Interventions

- Music and music therapy
- Hypnosis and hypnotherapy

Effectiveness Not Established

Pharmacologic Interventions

- Systemic anesthetics
- Antihistamines
- Anxiolytics
- Dexamethasone with intravenous (IV) chemotherapy
- Intraoperative dexmedetomidine for bladder spasm
- IV fentanyl
- Ketamine
- Morphine mouthwash
- Paravertebral block
- Perioperative drug combinations
- Pregabalin
- Preoperative dexamethasone
- Remifentanil patient-controlled analgesia (PCA)
- Steroid for bone flare pain
- Topical anesthetics
- Transmucosal opioids

Nonpharmacologic Interventions

- Acupressure
- Acupuncture and electroacupuncture
- Foot massage
- Guided imagery and imagery
- Honey
- Massage and aromatherapy massage
- Meditation
- Progressive muscle relaxation and guided imagery
- Reflexology
- Therapeutic touch
- Patient education

Not Recommended for Practice

Transdermal fentanyl

Definitions

Recommended for Practice

Interventions for which effectiveness has been demonstrated by strong evidence from rigorously designed studies, meta-analysis, or systematic reviews, and for which expectation of harms is small compared to the benefits

Likely To Be Effective

Interventions for which effectiveness has been demonstrated from a single rigorously designed conducted controlled trial, consistent supportive evidence from well-designed controlled trials using small samples, or guidelines developed from evidence and supported by expert opinion

Benefits Balanced With Harm

Interventions for which clinicians and patients should weigh the beneficial and harmful effects according to individual circumstances and priorities

Effectiveness Not Established

Interventions for insufficient or conflicting data or data of inadequate quality currently exist, with no clear indication of harm

Effectiveness Unlikely

Interventions for which lack of effectiveness has been demonstrated by negative evidence from a single rigorously conducted controlled trial, consistent negative evidence from well-designed controlled trials using small samples, or guidelines developed from evidence and supported by expert opinion

Not Recommended for Practice

Interventions for which lack of effectiveness or harmfulness has been demonstrated by strong evidence from rigorously conducted studies, meta-analyses, or systematic reviews, or interventions where the costs, burden, or harm associated with the intervention exceed anticipated benefit

Expert Opinion

Low-risk interventions that are consistent with sound clinical practice, suggested by an expert in a peer reviewed publication, and for which limited evidence exists (an expert is an individual who has published peer reviewed material in the domain of interest.)

For further information, see the "Decision rules for summative evaluation of a body of evidence" document (see the "Availability of Companion Documents" field).

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Cancer-related acute pain

Guideline Category

Management

Treatment

Clinical Specialty

Nursing

Oncology

Intended Users

Advanced Practice Nurses

Nurses

Guideline Objective(s)

To critically appraise the strength and quality of the evidence regarding the efficacy of pharmacologic and nonpharmacologic interventions to decrease cancer-related acute pain

Target Population

Patients with cancer-related acute pain

Interventions and Practices Considered

1. Epidural analgesia
2. Local anesthetic infusion
3. Gabapentin
4. Parecoxib
5. Intraspinal analgesia
6. Oral tramadol
7. Naproxen for colony-stimulating factor-related bone pain
8. Nefopam
9. Music and music therapy
10. Hypnosis and hypnotherapy

Note:

- The following were considered, but their effectiveness is not established: acupressure, acupuncture/electroacupuncture, systemic anesthetics, antihistamines, anxiolytics, dexamethasone with intravenous (IV) chemotherapy, foot massage, guided imagery and imagery, honey, intraoperative dexmedetomidine for bladder spasm, intravenous fentanyl, ketamine, massage and aromatherapy massage, meditation, morphine mouthwash, paravertebral block, patient education, perioperative drug combinations, pregabalin, preoperative dexamethasone, progressive muscle relaxation and guided imagery, reflexology, remifentanil patient-controlled analgesia (PCA), steroid for bone flare pain, therapeutic touch, topical anesthetics, transmucosal opioids.
- The following was considered but not recommended for practice: transdermal fentanyl.

Major Outcomes Considered

- Pain intensity/relief
- Adverse effects
- Quality of life

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

To conduct this review, PubMed and CINAHL® were searched from January 1, 2009 to July 31, 2016 to review and evaluate current evidence on pharmacologic and nonpharmacologic interventions for the management of cancer-related acute pain.

The Oncology Nursing Society (ONS) Putting Evidence Into Practice (PEP) program conducted a literature search for pain prior to 2009. Thirty-four articles from the previous search were included in the cancer-related pain guidelines. These articles were subject to the same inclusion and exclusion criteria as the articles for the new search.

Articles from January 2002 to July 2016 are represented in this guideline.

Pain Topic Search Strategy

The following strategy was used across all four pain guidelines (see the "Major Recommendations" field).

Databases Used

PubMed

(pain[ti] AND cancer[ti]) OR ((pain[ti] OR pain[majr]) AND neoplasms[majr]) AND (("2009/01/01"[PDAT] : "2016/07/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang] AND cancer[sb])

CINAHL®

(MH "Cancer Pain" OR (TI cancer AND TI pain)) OR (MM pain AND (cancer OR neoplasms OR oncolog*))
Limiters: English language; clinical queries: therapy–high sensitivity, therapy–high specificity, therapy–best balance

Inclusion Criteria

Full research report, systematic review, guideline, or meta-analysis
Study must report results of measurement of pain, including acute, chronic, breakthrough, or refractory pain.
The study examines a pharmacologic or nonpharmacologic intervention aimed at affecting pain.
Sample must include patients with cancer.
Include pediatric and/or adult studies
Studies aimed at treatment of pain (may include other symptoms) rather than treatment of the cancer
Sample size of at least 40, or 20 per study group
For complex interventions, the description of the intervention must be sufficient to identify the components of that intervention.

Exclusion Criteria

Gray literature
Descriptive study
Studies involving the use of standard short-acting or sustained or extended-release opioids (Only studies involving new formulations or unusual use of these medications will be included.)
Studies involving examination of effects of different types of surgical anesthesia
Studies involving surgical procedures as the primary intervention

Number of Source Documents

This review includes 114 studies of interventions for cancer-related acute pain.

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus (Committee)

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Panels of advanced practice nurses, staff nurses, and doctorally-prepared nurse researchers reviewed the literature base in the identified outcome areas. Professional health services librarians assisted in the conduct of the literature searches. Based on their analysis, the panels then formulated a judgment about the body of evidence related to the intervention under consideration. Three major components were considered by the panels in classifying the collective evidence into one of six Weight of Evidence categories (see the "Rating Scheme for the Strength of the Recommendations" field):

Quality of the data, with more weight assigned to levels of evidence higher in the PRISM categorization (such as randomized trials and meta-analyses)
Magnitude of the outcome (e.g., effect size or minimal clinically important difference)
Concurrence among the evidence (based on the premise that an investigator has less confidence in findings in which the lines of evidence contradict one another)

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The Oncology Nursing Society (ONS) information resources supervisor thoroughly searched the literature according to the strategy and search terms shown in the "Description of Methods Used to Collect/Select the Evidence" field. Studies that met inclusion criteria were assigned to pairs of pain Putting Evidence Into Practice (PEP) team members, who reviewed and summarized included articles using a standard form. Each article was reviewed by one pain PEP team member and then peer-reviewed by the second pain PEP team member. The form included information about the purpose of the study and a brief description of the intervention, sample size and characteristics, study design, measurement instruments, conclusions, limitations that show risk of bias and threats to validity in design, and implications for nursing practice.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The Putting Evidence Into Practice (PEP) program is a multifaceted project that involves the coordination of Oncology Nursing Society (ONS) staff as well as volunteer team contributors. PEP topic teams are comprised of volunteer nurse researchers, advanced practice nurses, and staff nurses who have

demonstrated experience and interest in a PEP topic. Topic leaders are nurse scientists or advanced practice nurses with demonstrated expertise in the topic through research and/or publications.

PEP team members applied the ONS PEP classification scheme (see the "Rating Scheme for the Recommendations" field) to individual interventions via Web-based meetings occurring about every six months. PEP team members included nurse scientists, advanced practice nurses, and staff nurses. Classification considers all previous as well as new evidence for each intervention. Conferences are facilitated by ONS research staff and classification of individual interventions is determined by team consensus.

Teams categorize interventions based on the ONS PEP weight-of-evidence classification schema. The schema is intended to be used with existing research-based knowledge on health interventions and is based on previous research. PEP teams consider the entire body of evidence rather than a single study for classification, and more weight is given to studies that rank higher in ONS's priority symptom management project categorization. Team members also consider the magnitude of the outcome and the concurrence of the evidence for an intervention prior to assigning a classification. Interventions are classified by team consensus after application of the schema.

Rating Scheme for the Strength of the Recommendations

Recommended for Practice

Interventions for which effectiveness has been demonstrated by strong evidence from rigorously designed studies, meta-analysis, or systematic reviews, and for which expectation of harms is small compared to the benefits

Likely To Be Effective

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Expert Opinion

Low-risk interventions that are consistent with sound clinical practice, suggested by an expert in a peer reviewed publication, and for which limited evidence exists (an expert is an individual who has published peer reviewed material in the domain of interest.)

For further information, see the "Decision rules for summative evaluation of a body of evidence" document (see the "Availability of Companion Documents" field).

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

The article has been reviewed by independent peer reviewers to ensure that it is objective and free from bias.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified for each recommendation (see the original guideline document).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Pharmacologic Interventions

Three randomized, controlled trials (RCTs) conducted among postoperative orthopedic patients and patients who underwent abdominal cancer surgery showed significant reduction in acute postoperative pain with the use of epidural analgesia. Other benefits of epidural analgesia included reduced time to flatus and decreased average length of hospital stay. A double-blind RCT compared thoracic versus lumbar epidural analgesia in post-thoracotomy patients and showed a significant reduction in pain score and consumption of analgesics in the thoracic epidural analgesic group.

A retrospective cohort study investigated the effect of intraperitoneal bupivacaine on postoperative pain in patients undergoing minimally invasive gynecologic surgeries. That study concluded that instillation of local anesthetic was associated with improved pain control and decreased median narcotic use.

Along with reduced postoperative pain scores, studies of gabapentin showed additional benefits, including less use of perioperative anesthesia and rescue medication. A double-blind RCT conducted among patients undergoing transurethral resection of the bladder showed significantly lower bladder pain scores and catheter-related discomfort. Preemptive administration of a single dose of gabapentin before total mastectomy significantly reduced the postoperative pain scores and use of analgesic.

An RCT using a placebo-controlled group showed lower postoperative pain score at all time points and a lower requirement for opioids with intravenous (IV) parecoxib prior to induction of anesthesia and 48 hours following gynecologic surgery.

A double-blind randomized trial showed preoperative intraspinal morphine doses (0.5 mg and 1 mg) having longer pain control and less analgesic consumption without a difference in adverse effects compared to a dose of 0.2 mg prior to surgery. A double-blind RCT showed that patients receiving intraspinal morphine in addition to patient-controlled anesthesia (PCA) had a lower need for morphine than patients with PCA alone.

An RCT demonstrated the effectiveness of naproxen (Aleve) in reducing the incidence and severity of pegfilgrastim (Neulasta)-induced bone pain.

A double-blind RCT evaluated the analgesic efficacy of nefopam (Acupan) on acute and chronic pain after breast surgery. Women were randomized to either the nefopam intervention group or the normal saline placebo-controlled group, in addition to preoperative midazolam and the same anesthetic regimen. Pain scores were significantly lower in the nefopam group at multiple time points during the first 24 hours of surgery.

Nonpharmacologic Interventions

Several studies involving adult and pediatric patients with cancer in different phases of cancer care suggested that listening to music reduced pain.

Hypnosis has been tested for various cancer-related symptoms, including pain, anxiety, depression, chemotherapy-induced nausea and vomiting, hot flushes, and fatigue. Overall, current evidence supports the use of hypnosis in ameliorating acute pain in adult and pediatric populations.

Potential Harms

One study noted increased urinary retention with the use of epidural analgesia.

Contraindications

Contraindications

The U.S. Food and Drug Administration contraindicates the use of fentanyl transdermal patch in the management of postoperative pain because of the risk of serious life-threatening respiratory depression, particularly in opioid-naive patients.

Qualifying Statements

Qualifying Statements

The authors take full responsibility for the content and did not receive honoraria or disclose any relevant financial relationships. The article has been reviewed by independent peer reviewers to ensure that it is objected and free from bias. Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Oncology Nursing Society.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Resources

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Sundaramurthi T, Gallagher N, Sterling B. Cancer-related acute pain: a systematic review of evidence-based interventions for Putting Evidence Into Practice. Clin J Oncol Nurs. 2017 Jun 1;21(3):13-30. PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2017 Jun 1

Guideline Developer(s)

Oncology Nursing Society - Professional Association

Source(s) of Funding

Oncology Nursing Society

Guideline Committee

Oncology Nursing Society Putting Evidence Into Practice® (ONS PEP) Expert Panel

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

All volunteers complete the standardized Oncology Nursing Society (ONS) conflict of interest and confidentiality forms.

The authors take full responsibility for this content and did not receive honoraria or disclose any relevant financial relationships.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Aiello-Laws L, Reynolds J, Deizer N, Peterson M, Ameringer S, Bakitas M. Putting evidence into practice: what are the pharmacologic interventions for nociceptive and neuropathic cancer pain in adults. Clin J Oncol Nurs. 2009 Dec;13(6):649-55. [55 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available to subscribers from the Clinical Journal of Oncology Nursing Web site .

Availability of Companion Documents

The following are available:

Brant JM, Eaton LH, Irwin MM. Cancer-related pain: assessment and management with Putting Evidence Into Practice interventions. Clin J Oncol Nurs. 2017 Jun 1;21(3):4-7. Available to subscribers from the Clinical Journal of Oncology Nursing Web site .

Acute pain. [internet]. Pittsburgh (PA): Oncology Nursing Society. 2017 Mar 30. Available from the Oncology Nursing Society (ONS) Web site .

Mitchell SA, Friese CR. Decision rules for summative evaluation of a body of evidence. [internet]. Pittsburgh (PA): Oncology Nursing Society. Available from the ONS Web site .

Johnson LA. Putting Evidence Into Practice: the process for evidence-based research. Clin J Oncol Nurs. 2014 Dec;18(6 Suppl):2-4. Available from the Clinical Journal of Oncology Nursing Web site .

Putting Evidence Into Practice (PEP) rating system overview. [internet]. Pittsburgh (PA): Oncology Nursing Society. Available from the ONS Web site .

ONS journal activity 2017: cancer-related acute pain: a systematic review of evidence-based interventions for Putting Evidence Into Practice. [internet]. Pittsburgh (PA): Oncology Nursing Society. Available from the ONS Web site .

Patient Resources

None provided

NGC Status

This NGC summary was completed by ECRI Institute on December 3, 2010. The information was verified by the guideline developer on February 3, 2011. This summary was updated by ECRI Institute on October 28, 2013 following the U.S. Food and Drug Administration advisory on Acetaminophen. The currency of the guideline was reaffirmed by the developer in 2011 and this summary was updated by ECRI Institute on November 8, 2013. This summary was updated by ECRI Institute on September 18, 2015 following the U.S. Food and Drug Administration advisory on non-aspirin nonsteroidal anti-inflammatory drugs (NSAIDs). This summary was updated by ECRI Institute on February 5, 2018. The updated information was verified by the guideline developer on February 21, 2018.

This NEATS assessment was completed by ECRI Institute on November 16, 2017. The information was verified by the guideline developer on February 21, 2018.

Copyright Statement

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